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ABSTRACT

Prepared for instructors of a training program for a southern pine sawmill, the guide is a result of the cooperative efforts of the Mississippi Industrial Training Program, Weyerhaeuser Company, Northwest Mississippi Junior College, and the Research and Curriculum Unit at Mississippi State University. Descriptive information is presented on the following topics: (1) the objectives of the Mississippi Industrial Training Program and the procedures involved in implementing a pre-employment training program; (2) detailed description of a three-week lumber industry training program; (3) the factors contributing to positive employer employee relationships; and (4) an explanation of the manufacturing process of random length mill. The purpose of the pre-employment training program as conceived by the Division of Vocational and Technical Education of the State Department of Education is to make available comprehensive manpower recruiting and training programs for new and expanding industries. (RG)

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PRE-EMPLOYMENT TRAINING FOR A SOUTHERN PINE SAWMILL:

INSTRUCTOR'S GUIDE

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PRE-EMPLOYMENT TRAINING FOR A SOUTHERN PINE SAWMILL: INSTRUCTOR'S GUIDE

Compiled By

Gary F. Beasley

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PREFACE

New and expanding industries are being established in the State of Mississippi at an unprecedented rate. This growth of industries necessitates that workers be trained to do their jobs well. The Division of Vocational and Technical Education, Mississippi State Department of Education, is attempting to make available comprehensive manpower recruiting and training programs for these new and expanding industries through the Mississippi Industrial Training Program.

The Mississippi Industrial Training Program has two primary objectives. First, the citizens of Mississippi shall be served through preparation programs which provide better job opportunities. Secondly, industry shall be served through efforts to provide the smoothest possible start-up at the least cost to the industry.

This instructor's guide is designed to provide information and learning experiences for people in the training program for a southern pine sawmill. The guide was developed through cooperation between the Mississippi Industrial Training Program, Weyerhaeuser Company, Northwest Mississippi Junior College, and the Research and Curriculum Unit at Mississippi State University.

ACKNOWLEDGMENT

Appreciation is extended to Weyerhaeuser Company's Manufacturing Plant at Bruce, Mississippi; the Mississippi-Alabama Regional Office at Columbus, Mississippi; and the Central Offices in Tacoma, Washington for assistance provided in developing this guide. Courtesy is also extended to Northwest Mississippi Junior College, and the Division of Vocational and Technical Education, Mississippi State Department of Education.

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THE MISSISSIPPI INDUSTRIAL TRAINING PROGRAM

Manpower training and industry is a specialized and very practical form of education. The purpose of a training program is to prepare workers to do their jobs well. To accomplish this task, a training program must develop skills for effective work, knowledge for intelligent actions and attitudes that bring a willingness for cooperation with fellow employees and with managerial and supervisory personnel. Effective training increases production, increases self confidence and improves morale of the workers.

New and expanding industries are being established in the State of Mississippi at an unprecedented rate. The question asked most often by people charged with the responsibility of starting up an industry and producing a product is, "How will we get capable employees?" The Division of Vocational and Technical Education, Mississippi State Department of Education, is attempting to answer this question by making available comprehensive manpower recruiting and training programs for these new and expanding industries.

The Mississippi Industrial Training Program has two primary objectives. First, the citizens of Mississippi shall be served through preparation programs which provide better job opportunities in new and expanding industries. Secondly, industry shall be served through efforts to provide the smoothest possible start-up at the least cost to the industry. The successful accomplishment of these objectives requires the cooperation and support of the Vocational-Technical Division of the Mississippi State Department of Education, the Mississippi Employment Service, the local Vocational and

Technical Training Institution, the Research and Curriculum Unit for Vocational and Technical Education at Mississippi State University and the new or expanding industry. These agencies working in cooperation plan and implement the following steps.

1. Assign an Instructional Materials Specialist to the Project. This staff member has the responsibility of assisting in the planning, organization and management of the program.
2. Determine Manpower Needs of the New Expanding Company. The state staff and representatives of the local vocational training facility work closely with the company personnel to delineate skills and personal characteristics, such as educational background, experience, etc., which the various jobs in the industry require.
3. Plan Recruiting, Screening, and Referral Campaign. The state staff and representatives of the local vocational training facility assist the local Employment Service Office with recruiting, screening, and referring for training the types of potential applicants the jobs in the industry require.
4. Test and Counsel. Local school counselors utilize the GATB and other appropriate tests and techniques as guidance tools in assisting individuals to identify the area of training in which they are most likely to succeed.

5. Determine Types and Amounts of Training. There are two main types of training conducted under the auspices of the Vocational and Technical Division. They are (1) pre-employment training and (2) on-the-job training which is provided by company employees in the plant after start-up.

6. Develop a Lead Time Schedule of the Major Activities. The state staff and local vocational training facility personnel work with company personnel in developing a lead time schedule for the start-up plan. This is a chronological listing of the major activities showing their relationship, in time, to each other, and to the planned start-up date. This keeps the various components on the same time track so that they enter the training cycle at the proper time.

7. Write, Purchase, or Assemble Training Aids. The equipment and expertise necessary to develop training aids, such as movies, video tapes, still photography, mock-ups of equipment, and manuals, are provided by the Instructional Materials Specialist.

8. Select and Prepare Instructors. Instructors are usually secured locally and are paid by the State. It is common practice to have the company furnish personnel to serve as instructors. These instructors are given assistance in developing their material and their teaching techniques.

9. Secure Facilities for Training Program. The program is operated at a vocational-technical facility (where accessible), in a temporary facility, or at a plant location. Regardless of which facility is used, the program is a joint responsibility of the local vocational-technical facility and

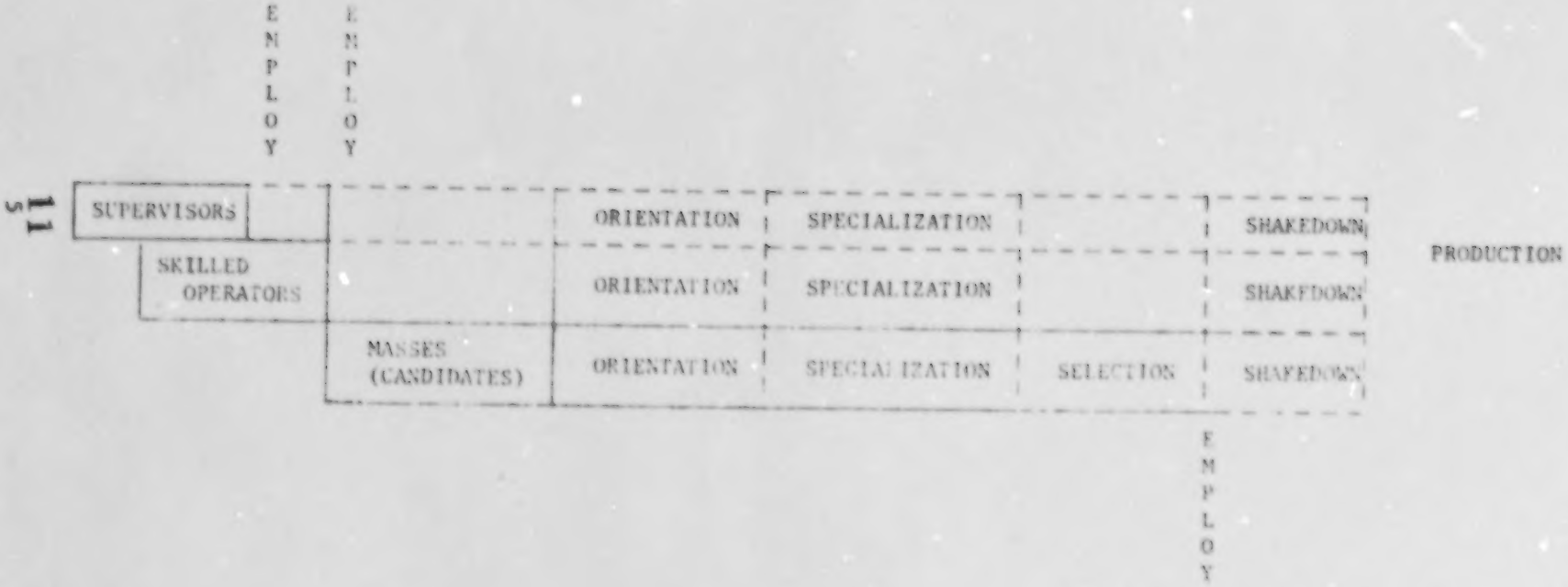
the State.

10. Conduct the Training. A representative of the State is required to be present at the beginning of each new training program to explain the role of the start-up training program, register training program participants, and explain regulations pertinent to the program. Each program participant is constantly evaluated by the instructors and the state staff members assigned to the project. Attendance records are carefully kept. These records are made available to the company upon completion of the program. The State issues certificates of completion to all the graduates, and they are referred to the company to make application for employment.

A schematic which delineates the concept of the training program is presented in Exhibit 1. Certain low risk employees would first be hired by the employer. They will become oriented to the company to some extent through specific assignments related to equipment installation, etc. Anticipation is that some of these employees will receive intensive training on equipment which requires specialized installation, operation, and maintenance. This training will either be provided by the equipment manufacturer or will be acquired at another plant which employs the same equipment. These personnel shall receive consideration for serving as instructors during the pre-employment training period for the masses of candidate employees. The initial period of pre-employment training shall include instruction relevant to all candidates as well as personnel already employed. The orientation shall take a more specialized mode as occupational roles are identified. Candidates shall be hired upon the basis of their interests in jobs as well as their aptitude and ability to perform

EXHIBIT 1

PRE-EMPLOYMENT TRAINING



for the industry. The pre-employment training shall be followed by a period of shakedown or on-the-job training. This training would focus on developing the skills and rhythm to operate the equipment. At the end of the shakedown period production for the plant will begin.

ORIENTATION TO THE TRAINING PROGRAM

With few exceptions, vocational and technical training programs sponsored by the Division of Vocational and Technical Education, Mississippi State Department of Education, are conducted under the auspices of local secondary and/or post-secondary schools. Northwest Mississippi Junior College, in cooperation with the State Division of Vocational and Technical Education, is the training institution responsible for conducting a program designed to provide instruction for people who have the interest, aptitude, and ability to work in the Forest Products industry.

Probably the best way to explain the training program and to provide answers to questions in the minds of many people is to answer such questions as why, who, what, how, when, and where.

WHY

The overall purpose of this training program is reflected in the following broad or general objectives:

1. To broaden employment opportunities for individuals in the community by providing a program to train people for employment in the Forest Products industry.
2. To familiarize program participants with the processes, product flow, terminology, tools, equipment, materials, and job requirements of the Forest Products industry.
3. To provide opportunities for people to explore jobs in the Forest Products industry without first leaving their present job.

4. To provide opportunities for program participants to develop entry-level skills for the Forest Products industry.
5. To provide opportunities for each participant to develop an awareness of the importance of safety, housekeeping, and quality control and an understanding of how these things relate to personal well-being and production efficiency in the Forest Products industry.
6. To provide opportunities for each participant to develop an awareness and understanding of the importance of teamwork and interdependence among departments in the Forest Products industry.
7. To assist each individual with the development of self-confidence, pride in his work, loyalty to his employer, and the ability to work harmoniously with fellow workers.
8. To provide the Forest Products industry with a source of people who possess appropriate interests, aptitudes, abilities, and entry-level skills to start-up production in the Forest Products industry with a minimum cost, effort, and turnover of personnel.

WHO

People who desire training for the Forest Products industry file an application with the local office of the Mississippi Employment Service. Personnel in this office interview, screen, and refer applicants selected for training to the Vocational and Technical Education Department of Northwest Mississippi Junior College. Guidance and counseling personnel at the training institution (N.M.J.C.) apprise the referred

applicants of the nature of the various jobs included in the Forest Products industry, and a thorough explanation is given of the requirements for each job.

Guidance personnel also utilize appropriate and approved techniques in assisting each applicant to determine his interests, aptitudes, and abilities as these characteristics relate to meeting job requirements in the Forest Products industry. This procedure helps each individual to identify the area of training in which he is most likely to succeed.

WHAT

Initial instruction for all participants will be an orientation to the Forest Products industry. Included in the orientation will be an overview of the processes and procedures usually required in producing a product in this industry.

Following orientation, instruction will be provided whereby participants will have the opportunity to gain specific knowledge and learn skills required for successful employment in the field of Lumber Production. Instruction in this phase of training will include, but will not be limited to, the following:

1. Language or terminology of the trade
2. Trade practices, procedures, and skills
3. Tools and equipment of the trade
4. Product flow and the need for interdependence among departments
5. Safety, housekeeping, and quality assurance

The pre-employment training program increment are:

1. Welcome
2. Explanation ~~of~~ Mississippi Industrial Training Program and explanation of hiring process
3. Company background
4. Raw material base and high yield forestry
5. Glossary of terms (nomenclature)
6. Safety and first aid
7. Quality control
8. General process plan
9. Grading, general
10. Basic math and units of measurement
11. What makes a good Weyerhaeuser Company employee
12. Employee benefits
13. Plant tour
14. Detailed, hands-on job explanation in small groups
15. Detailed, hands-on job explanation within the department they will be working

HOW

The initial period of pre-employment training will include instruction relevant to all candidates as well as personnel already employed at this point (see exhibit 1). This can be considered a moratorium period in terms of job placements as supervisors permit candidates to view the industry in its entirety. The information gained from testing and screening of candidates before they arrive in the program will be

used to help candidates self-select job opportunities. Then, the orientation will take a more specialized mode as occupational roles are identified. Candidates shall be hired upon the basis of their interest in jobs, as well as their aptitude and ability to perform for the Weyerhaeuser Company.

Some of these employees will receive intensive training on equipment which requires specialized installation, operation, and maintenance. This training will either be provided by the equipment manufacturer or would be acquired at another Weyerhaeuser plant which employs the same equipment. These personnel shall receive consideration for serving as instructors during the pre-employment training period for the masses of candidate employees. A pre-start-up supervisory training program will also be provided for these personnel.

The pre-employment training shall be followed by a period of "shakedown," or on-the-job training. This will be a period of readying men and equipment to produce surfaced lumber. The training would focus on developing the skills and rhythm to operate the equipment.

Additional Training.

1. Leadership training - 3 days
2. First Aid - 8 hours
3. Human Relations Training - 12 hours
4. Instruction for supervisors on how to train (techniques and principles) - 2 days
5. Fire brigade training program - 3 days

WHEN

The following is a weekly breakdown of the pre-employment training beginning September 10, 1973.

M	T	W	TH	Fri
3 hrs.	3 hrs.	3 hrs.	3 hrs.	

12 hours class time per week

Outline of Pre-Employment Training by Weeks

TRAINING WEEK #1
12 hours

Mon.

1. Welcome - 15 minutes
2. Explanation of Mississippi Industrial Training Program & explanation of hiring process - 30 minutes
3. Company background - 2 hours

Tue.

1. Raw Materials - 1 1/2 hours
2. Glossary of Terms - 1 hour

Wed.

1. Quality - 30 minutes
2. General Process - 1 hour
3. Plant Tour - 1 hour

Thu.

1. Basic Math & Units of Measurement - 1 hour
2. What makes a good Weyerhaeuser Company Employee - 30 min.
3. Employee Benefits - 1 hour

TRAINING WEEK # 2
12 hours

Mon.	1. Grading, General - 45 minutes 2. Safety & First Aid - 1 hour
Tue. Wed. Thu.	1. Detailed, hands-on explanation - in small groups (1/3 of total) - 9 hours

TRAINING WEEK #3
9 hours

All Week	1. Detailed, hands-on job explanation within the department they will be working.

WHERE

The first week of pre-employment training will be conducted in the Bruce High School Auditorium. The remaining two weeks of training will be conducted at the Weyerhaeuser Mill.

EVALUATION

Information is needed which can be used (1) to select prospective employees into the skill preparation program and (2) to judge the effectiveness of the Pre-Employment Training. Useful information obtained from individuals upon enrolling in the program. This information includes such items as work experience, reasons for applying for the training program, and schooling related to the prospective jobs.

The following steps present additional information which is obtained during the Pre-Employment Training period.

1. Carefully question each prospective employee individually to reveal his attitude toward the training program and jobs within the area in which he is training.
2. Observe each program participant to see how each meets the problems he encounters, his relationship with fellow class members and instructors, and his sense of responsibility. Is he a self-starter in reaching out for knowledge and skills?
3. Hold discussions with all instructors involved in the training program to evaluate prospective employees. This evaluation involves looking at areas of interest revealed by each learner during the Pre-Employment Training attendance records, etc. Final judgements concerning the future of each person should represent a consensus between the instructors and the prospective employee.
4. Have prospective employees read and study drawings, job specifications and product information. Ask them to repeat orally or in writing the information presented. This exercise should be used often during the instruction to determine if production terminology, methods, equipment and materials are understood by the prospective employees. A recognition of strengths and weaknesses serves as a selection device for on-the-job training, as well as a base for assisting in counseling prospective employees about future training and employment opportunities.

EMPLOYER-EMPLOYEE RELATIONS

Every individual possesses certain qualities, skills, and attitudes which set him apart from his associates. The application of these assets guides him toward his personal goals and makes him a happy, satisfied worker.

Each worker has a personal responsibility to himself to strive for the maximum in his life, his home, his community, and his job. Each segment in his daily associations affects his ability to reach maximum satsifaction. He should develop positive attitudes for maximization.

Employer-employee relationships are very crucial areas. Without the proper relationships between the employer and the employee, positive attitudes are difficult to attain. Distrust and communication breakdowns do not allow for proper maximization of job performance to develop. The employer will not receive the quality work from the employee, and the employee will not achieve the goals which make him a happy, satisfied worker.

Proper communication is a key element for maximum job performance. Each area has a responsibility to the other. The employer assesses the value of the employee and rewards him accordingly. The employee, in return gives the employer maximum utilization of his skills and time. But job performance and job responsibility go beyond monetary values, both for the employer and the employee.

The following areas of employee responsibility cannot be directly measured in dollar values.

Cooperation: Proper working relationships arise from worker cooperation.

Today's industry is designed for specialization. Many workers have

formed the opinion that their responsibility lies only within their immediate area and they do not have to cooperate with co-workers. This is not the proper attitude. Trade relationships should develop between one and his co-workers. Cooperation leads to the economical use of materials, which in the long run will yield higher personal rewards for the employee.

Honesty: Any degree of dishonesty cannot be tolerated, at any level of authority.

There are many forms of dishonesty; stealing, lying, and cheating are but a few. A dishonest person cannot be relied upon to perform his duties in a competent, conscientious manner. If the employee does not perform his duties as expected, he can disrupt the entire work-flow of the business.

Many types of dishonesty can be easily cited by many persons, but one type of dishonesty usually is overlooked. That type of dishonesty is stealing time. How can someone steal time? Arriving at work late and leaving work early are two examples of stealing time. "Goofing-off" on the job is another example. Although an extra expense to the employer, stolen materials can be re-purchased; but stolen time cannot be re-purchased at any price.

Dependability: The performance of an individual to accomplish any task given, when and where he is needed, in a competent and consistent manner.

Skills and techniques needed by an employee are not the total picture of a competent employee. If a worker cannot be depended upon to perform those skills and techniques as situations arise, then he cannot be trusted to do the job. An undependable worker is usually resented by those workers who are dependable and this makes it difficult to form proper working relationships, thus reducing total job efficiency.

Initiative: Performing tasks outside the scope of established responsibilities.

Employees should help each other. Occasionally a job arises which the employee is not responsible to perform; however, a dedicated employee will do such tasks without being told. By accomplishing those tasks without being told, supervisors will assign more responsibilities while rewarding the employee for showing initiative.

Enthusiasm: Eager accomplishment of duties.

To make his work interesting, an employee should become involved. By being interested in a job, one will find that the hours pass quickly and more pleasantly. An employee should concentrate on the positive points of his job and show a willingness to learn. He should ask questions in order to know more about his company, his job, and the product he helps to make. He should let his employer see that he enjoys working.

Eagerness to follow directions and to accomplish those tasks helps to impress one's employer. One should ask the employer to repeat directions if he doesn't understand. It is no disgrace to misunderstand what is asked of one.

Acceptance of criticism: A necessary attitude in any function of life.

"Nobody is perfect." "Everyone makes mistakes." How many times has one heard these statements in his life, thousands, millions? That's entirely possible. But how true they are!

Before one can learn and grow, he must correct his mistakes, and not make those same mistakes again. Some people can easily recognize their own mistakes and will initiate action themselves. But others don't realize their mistakes and consequently must be informed. Constructive criticism informs a person of his mistakes with intentions to aid that person in

self-improvement. Any person not willing to accept criticism is, in effect, saying that he is not willing to improve himself.

Loyalty: Dedicated to achieve company objectives.

An employee should learn the policies of the company and remain loyal to these policies in his work. Any misunderstanding arising from his work should be kept within the organization. This will enable problems to be solved from within the company, where the facts are better understood.

This loyalty does not mean that an employee should not question certain policies. He should learn the reasoning behind the policy and try to understand it. Once he understands the policy, he will better understand the company and its actions.

A loyal worker should defend company policy in the presence of those who do not understand it. By explaining the policy to those individuals, he will be helping the company and himself. Helping create proper attitudes toward his company will benefit all concerned.

Attitude: State of mind influencing one's actions.

An employee's personal attitudes shape and mold his actions in his job, life, and home. Behavior is affected by the attitude developed. The ability to perform is affected by one's behavior. What type of attitude do I have? How does it affect me? Can I improve or change my attitude? These are questions that need to be answered by an employee if he is to achieve personal success.

A person should apply a positive attitude to every aspect of his life. By applying positive attitudes one will have a richer, more rewarding relationship with his associates, family, friends, and himself.

The preceding areas of employee job responsibility are but a few of the many areas which could be explored. Those mentioned are but mere

broad guidelines which might aid the employee in a successful and rewarding career.

Employees give use of their time and skills to employers with the expectation of being rewarded. The usual reward is the pay check. But is this the only responsibility of the employer? No, the total employer responsibility cannot be directly measured in dollar values. To secure the talents of the worker, the employer responsibility goes beyond the normal means of reward.

Pay Salaries of Employees: A pay check is not the only contribution that the employer should provide the worker.

An employer will pay employees for the work they have done. The amount the employee receives depends on many factors. The type work an employee does, the skills he possesses, the experience he has, and state and federal laws are but a few of these factors. An employee should expect his employer to pay him at precisely the date specified on the contract.

Provide Safe Working Conditions: Safe working conditions make happy and satisfied employees.

Safe working conditions are a must in any industrial firm. Safe working conditions reduce accidents and increase worker performance. Any unsafe practice or working condition should be reported to the proper authorities.

Provide Training: Continuous training and up-grading of skills are essential in preparing competent employees.

An employer hires workers with the intention of giving them work. If the employee is not trained to perform his work, the company should train him for his job. Employers must provide whatever on-the-job training is necessary for the employees to do their work.

Changes: Changes in jobs are expected; however, informed employees adjust to these changes more quickly.

If any change in policy, working conditions, or pay has occurred, the employer should notify the employee immediately. Employees who do not understand these changes should ask for further explanation.

MANUFACTURING PROCESS OF RANDOM LENGTH MILL

The Weyerhaeuser Company mill located at Bruce, Mississippi, will produce surfaced pine construction lumber of the following dimensions: 1" x 4"; 2" x 4"; 2" x 6"; 2" x 8"; and 2" x 10". The plant is considered a random length mill with products manufactured up to 20 feet in length.

The manufacturing process begins after receiving tree length logs across the truck weighing scales. The loaded log truck is weighed on its way into the log yard, then weighed again empty on its way out. The difference in the weights indicates the number of pounds of logs delivered to the yard. This weight is then translated into the volume or scale of logs delivered. To indicate volume, Weyerhaeuser uses the term "Cunit," which is defined as one hundred cubic feet of wood fiber.

These logs are then unloaded from the truck by the Bush Log Crane and placed either in a circular pile around the crane or on the Log Infeed Deck. We also have a Caterpillar 966 which is capable of unloading trucks and stacking logs in the log yard.

After placement on the Log Infeed Deck, the log is kicked into a conveyor which carries it to a log cut-off station where the decision is made as to whether it is to be bucked off in the 16 ft. length or sent on through the mill. If the butt end of the log is over 13 inches in diameter and contains clear type lumber, it will be bucked off at the 16 ft. length; and this portion will be taken out of the conveyor for shipment to the Weyerhaeuser mill at Philadelphia, Mississippi.

The remaining portion of the log is then carried on into the Barker.

The Barker, or Debarker as it is sometimes termed, has several fingers rotating around the log which physically drag the bark off the log as the log passes through the Barker. The bark falls into a conveyor where it is carried to a "Hog," ground up, and then carried to a storage bin. The ground up bark, termed Hog Fuel, is then used as fuel to fire the boiler.

After the log has been barked, it travels to a log Merchandising station which contains six log cut-off saws. Here, the log is cut into lengths that yield the best grades of lumber, or which facilitate the log handling. From this station the logs are fed to the Quad Saw.

The Quad Saw consists of four band saws operating together in a nest as one machine. A feed chain carries the log through the Quad Saw where it is ripped into five segments. These five segments are identified as the center cant, the two side board cuts, and the two slab cuts. The center cant continues on the Quad outfeed chain and is dropped into the Edger infeed transfer chains. The two side board cuts and the two slab cuts are shoved off the Quad outfeed onto the Resaw infeed transfer chains ahead of the Drop Separator.

At the Drop Separator station the two side cut boards are dropped out and sent to the Edger infeed transfer chains, and the two slabs continue on to the Resaw infeed. The Drop Separator also has the capability of sending "junk" wood to the slasher transfer chains.

The Resaw cuts the slab into a board of usable thickness and outfeeds it onto the Edger infeed transfer chain. The unusable portion is discharged into the Chipper Conveyor.

The Edgers are combination edgers containing a battery of nine saws, as well as a set of three shifting saws. The center cant from the Quad is fed into the battery side, sawed into 2 x 4s, and discharged onto the trimmer transfer chains. The side cut boards are fed into the shifting saw side where they are edged into usable boards. The boards are discharged onto the trimmer chains. The edgings are discharged onto the Slasher Transfer chain, and the slasher transfer chain discharges into the Chipper Conveyor.

The Chipper Conveyor carries waste wood into rotating knives in the Chipper that cut the wood into segments approximately 1½ inches long. The chips are screened and fed into a blow pipe that loads them into large, gondola rail cars for shipment to paper mills.

Lumber travels on the Trimmer transfer chain to the Unscrambler. The Unscrambler is designed in such a way that it places one board at a time onto the Trimmer infeed chain. At this point, there is another Drop Separator station. This allows lumber that needs resawing to be sent back to the Resaw; the lumber that needs edging to the edger; and the "junk" wood to the slasher chains.

At the Trimmer, lumber is trimmed; that is unusable wood is cut off of usable wood. The Trimmer outfeeds directly into the automatic Drop Sorter.

Through sensing devices the Drop Sorter determines the length, width, and thickness of a piece of lumber; then carries it out along an overhead chain and drops it into the proper cart. When the cart is full, a Forklift picks up the lumber and transports it to the Lumber Stacker.

At the Lumber Stacker, an Unscrambler feeds the boards onto a table chain. When enough boards are on the chain for one layer of lumber, a set of forks carries the layer out to the stack; the forks retract, and an automatic stick layer lays a course of kiln stickers on top of the layer. This process is repeated until a 4 ft. wide by 6 ft. high stack of lumber is produced. A Forklift then transports and places four of these stacks of lumber onto kiln trucks, building an 8 ft. wide and 12 ft. high kiln car.

When enough kiln cars are accumulated for a kiln charge, the Kiln is loaded and the kiln drying process begins. Steam from the boiler flows through the heating coils and cooks the moisture from the lumber much like a large oven. When 90% of the moisture is removed from the lumber in that particular charge, the kiln is turned off and unloaded. The kiln cars are rolled out into the Cooling Shed where they stay until the lumber is cooled down. After cooling, a Forklift places the 4 ft. x 6 ft. stacks of lumber onto the Planer infeed chains

At the Planer infeed, the packages are transferred onto a package breakdown Hoist or Tilt Hoist. This device tilts the package of lumber and indexes it up one layer at a time, so that as each layer slides off the top, the Kiln Stickers fall into a conveyor which transports them to a

sticker basket where they are stacked for reuse. The lumber that slides off at the Tilt Hoist onto transfer chains is transported toward the Planer infeed table. In this movement, the lumber passes under an electronic moisture measuring device. If the lumber is too wet, the moisture meter triggers a gate which allows the wet board to drop out onto a conveyor. This conveyor transports it to a wet lumber bin, where it is gathered up and re-introduced into the drying cycle.

Those pieces of lumber that are dried sufficiently continue onto the Planer infeed table proper. This table has several indexing rolls and chains which are designed to feed boards continuously end to end into the Planer at a high rate of speed. As the board passes through, the Planer knives, rotating at an extremely high rate of speed, physically cut away the rough, excess wood, leaving a smooth finish on the board. The board continues on out of the Planer through an Edge Printing station where the Company's trademark is printed on the edge of each board. It continues on further through a spray booth where a mixture of pigment, fungicide, and emulsified wax, is sprayed onto all surfaces of each board. Out of the Planer the board is finally discharged onto the Lumber Grader's table.

At the Grader's Table certified lumber graders turn each piece of lumber to determine its highest grade, and so designate it with a grade mark crayon. From this station each board is fed into the dry lumber Trimmer. The board is here precision end trimmed, or trimmed for grade according to any trimming instructions designated on the lumber by grader's mark or symbol. At this point each board is programmed to receive the

proper grade stamp and be placed on its proper lumber tray on the Planer outfeed chain.

The Planer outfeed chain consists of three layers of moving chains. The two bottom chains are called trays and receive lumber of one length and one grade to be stacked later by the Package Maker. These trays are programmed to receive the high volume items. The top chain is called the Planer chain and has side pull carts. The Planer chain receives trimmed back lengths of all grades, as well as the low volume items, in the length going to the trays. On the Planer chain, lumber is pulled according to length and grade into side pull carts; or a predetermined item is allowed to continue to the end where it will accumulate in a Surge area and be stacked into packages.

Lumber from the trays, and from the Surge area at the end of the top chain of the Planer chain, is stacked into packages by the Package Maker. This device operates much the same as the green lumber stacker, but uses stacking lath every fifth layer rather than kiln stickers under each layer. From the Package Maker, packages of lumber are transferred by rollcase to a Package Strapping machine where metal bands are applied, then on to a "Shed-Pac" station where each package can be wrapped with waterproof wrapping. The side-pull packages from the Planer chain are introduced into the Strapping and Wrapping stations by Forklift.

From the Strap and Wrap area a package of lumber is tallied into the lumber inventory and loaded on rail cars or trucks, or goes into storage for later shipment. Lumber will go from Bruce to construction sites throughout the central and eastern United States of America.